

इंटरनेट

मानक

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“जानने का अधिकार, जीने का अधिकार”

Mazdoor Kisan Shakti Sangathan

“The Right to Information, The Right to Live”

“पुराने को छोड़ नये के तरफ”

Jawaharlal Nehru

“Step Out From the Old to the New”

IS 9047-3 (1983): Data sheet for aerial ropeways and cableways, Part 3: Data to be supplied by intending purchaser for transportation of passenger, underground [MED 6: Continuous Bulk Conveying, Elevating, Hoisting Aerial Ropeways and Related Equipment]



“ज्ञान से एक नये भारत का निर्माण”

Satyanarayan Gangaram Pitroda

“Invent a New India Using Knowledge”



“ज्ञान एक ऐसा खजाना है जो कभी चुराया नहीं जा सकता है”

Bhartrhari—Nitiśatakam

“Knowledge is such a treasure which cannot be stolen”



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*Indian Standard*DATA SHEET FOR  
AERIAL ROPEWAYS AND CABLEWAYSPART III DATA TO BE SUPPLIED BY INTENDING PURCHASER  
FOR AERIAL SYSTEM FOR TRANSPORTATION OF  
PASSENGERS, UNDERGROUND

**1. Scope** — Covers the technical data to be supplied by the purchaser of the aerial system for the transportation of passengers in underground mines or other similar places.

**2. Data****2.0 General**

- a) Date.....
- b) Purchaser.....
- c) Location.....
- d) Information obtained from.....
- e) Maintenance and back-up facilities available.....
- f) Persons to be contacted.....
- g) Name of project.....
- h) Name of consultants, if engaged by the purchaser.....
- j) Nature of plant, permanent or temporary.....

**2.1 Capacity****2.1.1 Conveying capacity**

- a) Up direction.....passengers per hour
- b) Down direction .....passengers per hour
- c) Number of shifts.....
- d) Duration of shift.....h
- e) Hours of operation during the shift.....h
- f) Monthly operation.....days
- g) Annual operation.....days

**Note** — While indicating conveying capacity, the point(s) of pick up and destination point(s) shall be indicated.

**2.1.2 Traffic data****2.1.2.1 Passenger traffic**

- a) Hourly traffic.....
- b) Daily traffic.....

**2.1.2.2 Type of carrier.....Single/Double/Triple seat**

**Note** — Indicate whether footrests are required if chairs are to be used.

**2.1.3 Future plan**

- a) Extension of the length to.....m
- b) Increase of the capacity to.....passengers per hour

**2.1.3.1 Which is preferable**

- a) To increase number of carriers.....
- b) To increase the rope speed.....
- c) Or both.....
- d) Has the purchaser any opinion regarding above.....  
.....

**2.1.4 Type of ropeways**

- a) Monocable/bicable ropeways.....
- b) Circulating type.....with fixed/detachable grips

**2.2 Length**

**2.2.1 Length of the proposed line.....m**

**2.2.2 Drawings and maps ( The following drawings shall be provided, where available )**

- a) Topographical maps ( state scale and drawing number ).....  
.....
- b) Ground profile ( state scale and drawing number ).....  
.....
- c) Longitudinal section of gallery along the route, along with the centre line and minimum 6 m on either side of the route.....  
.....
- d) Station area contour plan ( separately for surface terminal, underground terminal and intermediate pickup stations ).....  
.....
- e) Plan of underground obstructions especially at stations.....  
.....
- f) Details of existing/proposed terminal station arrangements.....  
.....
- g) Give reduced levels of floor and roof of gallery at 3 m interval.....  
.....
- h) Geological cross-section of seam in case of coal mines.....

**2.2.3 Route**

- a) How many pick-up points will be utilized ?
  - i) Downward journey.....
  - ii) Upward journey.....
- b) Intermediate station in addition to two-end terminals.....

## c) If there are no topographical maps and ground profiles along the route:

- i) Difference in height between surface terminal and underground terminal.....m
- ii) Difference in height of intermediate stations and surface terminal.....m
- iii) Difference in height of intermediate station and underground terminal.....m
- iv) Any appreciable rise or fall along the route.....m
- v) Distance between surface terminal and other stations.....m

**2.2.4 Presence of any obstacles along the route**

- a) Mine haulage track crossing.....
- b) Air crossing.....
- c) Conveyor installation crossing.....
- d) Geological disturbances along the route, give plan of workings and geological disturbances enroute .....
- e) Any major roof falls ( previous ) along the route.....
- f) Any area prone to roof falls.....
- g) Other obstacles .....
- h) If there are such obstacles, give detailed information regarding them.....
- j) Specify clearance to be provided, if any, in relation to levels.....

**2.3 Location of the Driving Stations — Specify whether the location of the drive station is preferred on.....surface terminal/underground terminal/at the intermediate ( drive and divide ) station.****2.4 Facilities at the Terminal Stations**

- a) Planning permissions required for site investigation from authorities.....
- b) Is a fully automatic system required for conveying empty carriers on the shunt rail.....
- c) Man-power ( technical/non-technical ) availability for manual and semiautomatic loading/unloading .....
- d) Attach contoured plan of station areas ( 30 m length along the route and 6 m on either side of route ) .....
- e) Details of existing building at station sites ( give surface, layout plan ) .....
- f) Whether existing buildings can be converted to work as stations.....
- g) Whether any additional building is to be provided at station, if so, give details.....

**2.5 Available Power****2.5.1** Electric power available at .....station/route**2.5.2 Electrical equipment**

	<b>Surface Terminal</b>	<b>Underground Terminal</b>
<b>a) Power Supply</b>		
Volts	..... V	..... V
Phase	Single/three	Single/three
Cycles	..... Hz	..... Hz
<b>b) Substation</b>	Indoor/Outdoor	
Primary voltage	..... V	..... V
Secondary voltage	..... V	..... V
No. of transformers	.....	.....
<i>Available at present</i>		
kVA capacity	..... kVA	..... kVA
Phase	Single/three	Single/three
Oil or dry	.....	.....
<i>To be added</i>		
kVA capacity	..... kVA	..... kVA
Phase	Single/three	Single/three
Oil or dry	.....	.....
<b>c) New Transformers</b>		
To be added by	Purchaser/Supplier	Purchaser/Supplier
Part of tender/separate tender	.....	.....
<b>d) Motors — Frame Type:</b>		
Open	.....	.....
Splash proof	.....	.....
Totally enclosed	.....	.....
Flame proof	.....	.....
Fan cooled	.....	.....

	Surface Terminal	Underground Terminal
<b>e) Illumination of the Complete System to be Provided</b>		
i) By purchaser/supplier .....	.....	.....
ii) Voltage .....	..... V	..... V
iii) Cycles .....	..... Hz	..... Hz
iv) Incandescent .....	.....	.....
v) Florescent .....	.....	.....
vi) Transformers:		
1) Phase .....	Single/three	Single/three
2) kVA capacity .....	..... kVA	..... kVA
3) Primary voltage .....	..... V	..... V
4) Secondary voltage .....	..... V	..... V
5) Indoor or outdoor type .....	.....	.....
6) Furnished by .....	Purchaser/Supplier	Purchaser/Supplier

**Note** — In case the voltage fluctuations are more than  $\pm 60$  percent, it is preferable to either stabilize the same or to go in for steam/diesel electric generators/drive system in addition to normal power supply.

**f) Night lighting required at:**

- i) Surface terminal..... Yes/No
- ii) Intermediate towers.....
- iii) Flood light along the line.....

**g) Signalling and communication system .....to be/not to be included.**

Type: Signalling and communication system shall be such that the ropeway system can be stopped from any point on its length.

- Signal lights.....
- Signal horn .....
- Telephone .....
- Loud speakers .....
- Others .....

**2.5.3 Alternative motive power by..... Diesel engine/Diesel generator**

**2.6 Structures**

**2.6.1 Soil data ( for surface, underground and intermediate stations ) — Bearing capacity, shear strength, settlement, sliding, characteristics, type of soil.....**



**2.6.2** The area along the alignment ..... private/public

**2.6.3** Station structures ( steel, concrete, wood ):

- a) Floors.....
- b) Siding.....
- c) Roofing .....
- d) Windows .....
- e) Insulation .....
- f) Fireproofing .....

**2.6.4** Trestles ..... steel/wood/combination

**2.6.5** Minimum clearance required along the route:

- a) Along the route.....
- b) At the surface terminal.....
- c) At the underground terminal.....
- d) At the highest intermediate point.....

## **2.7 Climatic Conditions**

### **2.7.1 Surface conditions**

- a) Temperature ( outdoor ), Maximum.....°C, Minimum .....°C
- b) Humidity ( outdoor ) Maximum.....%, Minimum.....%
- c) Wind velocity, Normal.....km/h, Maximum.....km/h
- d) Direction of wind.....
- e) Storm conditions:
  - i) Maximum wind velocity.....
  - ii) Duration.....
  - iii) No. of times in a year.....
- f) Seismic data .....
- g) Land slide data.....
- h) Rainfall, intensity.....Total rainfall.....mm
- j) Duration of rainfall, from..... to.....
- k) Snowfall, intensity.....Total snowfall .....
- m) Duration of snowfall, from..... to.....
- n) Altitude above mean sea level of driving station.....

### **2.7.2 Underground conditions**

- a) Temperature ( station site ), Maximum..... °C Minimum..... °C
- b) Humidity, Maximum..... Minimum.....
- c) Air velocity.....km/h
- d) Subsoil water.....present/not present; pH value.....
- e) Air way.....return/in take

## 2.8 Erection and Construction

- a) Foundation work by ..... purchaser/supplier
- b) Inland transportation by ..... purchaser/supplier
- c) Supervision by ..... purchaser/supplier
- d) Erection by ..... purchaser/supplier
- e) Commissioning by ..... purchaser/supplier
- f) Who will furnish power, water and compressed air ? ..... purchaser/supplier
- g) General information about unloading facilities, such as:
  - i) Available space .....
  - ii) Indoor storage .....
  - iii) Outdoor storage .....
  - iv) Materials handling .....
- h) Nearest port/delivery station .....
- j) Nearest railway station .....
- k) Nearest roadway station .....
- m) Transportation limitations regarding weight and size, if any.....
- n) Officer's, labourer's and engineer's quarter shall be provided by ..... purchaser/supplier

**Note** — Give details regarding feeder roads, their conditions and bridges on the roads.

**2.9 Local Regulations for Aerial Ropeways and Electricity Rule** — If there are any regulations please attach hereto .....

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## 2.10 Miscellaneous

### 2.10.1 Authorities to be contacted for:

- a) Land acquisition .....
- b) Jungle clearance .....
- c) Road/Highway crossing .....
- d) Overhead power transmission lines crossing .....

**2.10.2 Any other information** .....

.....

**Note** — Data applicable to special system, if any, may be given under this heading.

## EXPLANATORY NOTE

Transportation by rope aerially is another type of transportation system like railways, roads, etc. The passengers are transported by means of a carrier/carriers suspended on tensioned steel wire rope/wire ropes supported at intervals to limit sagging and thereby prevent passengers from touching the ground except at planned points.

This is particularly useful in regions where the ability of surmounting natural barriers gives them a great advantage over railways or roads, both of which may need heavy civil engineering work to secure easy gradients. Aerial ropeways are inexpensive to maintain; their power demand is modest and they are not seriously affected by adverse climatic conditions. It can negotiate valleys, steep gradients, go in a straight line and is limited only by storm conditions and visibility.

The merits of aerial ropeways over other modes of transport have made aerial ropeways the choice of the mining industry in its daily operations. Mining industry has adopted the aerial ropeways mainly for transporting sand from river banks to pit head for storing purposes. In addition aerial ropeway are also being used for transporting coal from pit head/washeries to washeries/steel plants.

The expense of underground mine working introduces fatigue and reduces the actual working hours of the workers resulting in lower efficiency. This problem can be solved by introduction of mechanical means of transport such as manriding haulages, locomotive transport or aerial ropeways. For proper selection and design of the mechanical means of transport of men, the first step would be to collect the data required. This part of standard, therefore, aims at listing the data to be supplied to the manufacturers by intending purchaser of an aerial system for transportation of passengers in underground mines or similar operations. The other parts aim at listing the data to be supplied to the manufacturers by the intending purchasers of following types of aerial system:

- Part I    Transportation of goods
- Part II    Transportation of passengers, surface
- Part IV    Transportation of goods, underground
- Part V    Portable
- Part VI    Transportation of forestry products